

Amendment to the Claims

1. (Cancelled)

2. (Currently Amended) A solder paste printing apparatus as claimed in claim [1] 9, wherein the pressurizing member is movably mounted with respect to the squeegee between a pressurizing position where the pressure is applied to the solder paste and a retreated position where the applying of the pressure is released, provided with an axial direction extended roughly parallel to the axial direction of the squeegee in the pressurizing position, is able to form the first gap through which the solder paste can pass in the direction opposite to the printing direction of the squeegee during the solder paste printing, and is arranged so that the second gap through which the solder paste can pass from the first gap toward the squeegee side is arranged between the pressurizing member and the squeegee.

3. (Currently Amended) A solder paste printing apparatus as claimed in claim [1] 9, wherein the pressurizing member is a round bar.

4. (Cancelled)

5. (Currently Amended) A solder paste printing apparatus as claimed in claim [1] 9, wherein a pair of squeegees are provided, and at least one of the pair of squeegees is consistently brought in contact with the printing mask at least during printing.

6. (Currently Amended) A solder paste printing apparatus as claimed in claim [1] 9, wherein the first gap has a roughly wedge-shaped cross-section shape that is narrowed toward the squeegee.

7. (Currently Amended) A solder paste printing apparatus as claimed in claim [1] 9, wherein the pressurizing member has a height from the surface of the printing mask, the height being lower than a rolling height of the solder paste during printing, and the pressurizing member sinks in the rolling solder paste during the printing.

8. (Currently Amended) A solder paste printing apparatus as claimed in claim [1] 9, wherein the pressurizing member is fixed so as to be unable to rotate.

9. (Currently Amended) A solder paste printing apparatus ~~as claimed in claim 1,~~ for printing a solder paste supplied onto a surface of a printing mask having a number of openings, the printing apparatus comprising:

a squeegee movable in a printing direction along the surface of the printing mask for printing on a circuit-forming body placed on a back surface of the printing mask;
and

an elongated pressurizing member that has an axial direction extending roughly parallel to an axial direction of the squeegee, the pressurizing member being arranged to form between the pressurizing member and the printing mask a first gap through which the solder paste can pass in a direction opposite to the printing direction of the squeegee during a solder paste printing operation, the pressurizing member also being arranged to form between the pressurizing member and the squeegee a second gap through which the solder paste can pass from the first gap toward the squeegee side of the pressurizing member.

wherein the pressurizing member is provided in a vicinity of an edge of the squeegee so that a pressure toward the printing mask is applied to the solder paste by the pressurizing member when the solder paste passes through the first gap located between the pressurizing member and the printing mask during the solder paste printing operation.

wherein a ~~cross-section~~ cross-sectional shape of the pressurizing member that is perpendicular to the axial direction of the pressurizing member is varied in the axial direction of the pressurizing member according to [a] the number and [a] size of the openings of the printing mask, thus varying the pressure to be applied from the pressurizing member to the solder paste against the printing mask.

10. (Currently Amended) A solder paste printing apparatus ~~as claimed in claim 1~~, for printing a solder paste supplied onto a surface of a printing mask having a number of openings, the printing apparatus comprising:

a squeegee movable in a printing direction along the surface of the printing mask for printing on a circuit-forming body placed on a back surface of the printing mask;
and

an elongated pressurizing member that has an axial direction extending roughly parallel to an axial direction of the squeegee, the pressurizing member being arranged to form between the pressurizing member and the printing mask a first gap through which the solder paste can pass in a direction opposite to the printing direction of the squeegee during a solder paste printing operation, the pressurizing member also being arranged to form between the pressurizing member and the squeegee a second gap through which the solder paste can pass from the first gap toward the squeegee side of the pressurizing member,

wherein the pressurizing member is provided in a vicinity of an edge of the squeegee so that a pressure toward the printing mask is applied to the solder paste by the pressurizing member when the solder paste passes through the first gap located between the pressurizing member and the printing mask during the solder paste printing operation.

wherein the pressurizing member is ~~rotated~~ rotatable in a direction reverse to a rolling direction of the solder paste around the pressurizing member during printing.

11. (Cancelled)

12. (Currently Amended) A solder paste printing method as claimed in claim [11] 14, wherein an interval of the first gap is smaller than a rolling height of the solder paste during printing, and the pressurizing member sinks in the rolling solder paste during printing.

13. (Currently Amended) A solder paste printing method as claimed in claim [11] 14, wherein the pressurizing member is fixed so as to be unable to rotate.

14. (Currently Amended) A solder paste printing method ~~as claimed in claim 11~~, for printing a solder paste located on a surface of a printing mask having at least one opening, the printing method comprising:

moving a squeegee on the surface of the printing mask in a printing direction so as to print on a circuit-forming body placed on a back surface of the printing mask via the opening;

applying a pressure toward the printing mask from an elongated pressurizing member to the solder paste by making the solder paste pass in a direction opposite to the printing direction of the squeegee through a first gap formed between the printing mask and the pressurizing member during solder paste printing in a state in which the pressurizing member provided in a vicinity of an edge of the squeegee is positioned in a

pressurizing position where a pressure is applied to the solder paste from a retreated position where no pressure is applied thereto; and

making the solder paste pass again through the first gap located between the pressurizing member and the printing mask after the solder paste that is passing from the first gap toward the squeegee side of the pressurizing member passes through a second gap located between the squeegee and the pressurizing member,

wherein a ~~cross-section~~ cross-sectional shape perpendicular to the axial direction of the pressurizing member (28D) is varied in the axial direction of the pressurizing member according to the [a] number and [a] size of the openings of the printing mask, thus varying the pressure to be applied from the pressurizing member to the solder paste against the printing mask.

15. (Currently Amended) A solder paste printing method ~~as claimed in claim 11, for~~ printing a solder paste located on a surface of a printing mask having at least one opening, the printing method comprising:

moving a squeegee on the surface of the printing mask in a printing direction so as to print on a circuit-forming body placed on a back surface of the printing mask via the opening;

applying a pressure toward the printing mask from an elongated pressurizing member to the solder paste by making the solder paste pass in a direction opposite to the printing direction of the squeegee through a first gap formed between the printing mask

and the pressurizing member during solder paste printing in a state in which the pressurizing member provided in a vicinity of an edge of the squeegee is positioned in a pressurizing position where a pressure is applied to the solder paste from a retreated position where no pressure is applied thereto; and

making the solder paste pass again through the first gap located between the pressurizing member and the printing mask after the solder paste that is passing from the first gap toward the squeegee side of the pressurizing member passes through a second gap located between the squeegee and the pressurizing member,

wherein the pressurizing member is rotated in a direction reverse to a rolling direction of the solder paste around the pressurizing member during printing.

16. (Currently Amended) A solder paste printing apparatus ~~as claimed in claim 1, further comprising:~~ for printing a solder paste supplied onto a surface of a printing mask having at least one opening, the printing apparatus comprising:

a squeegee movable in a printing direction along the surface of the printing mask for printing on a circuit-forming body placed on a back surface of the printing mask;

an elongated pressurizing member that has an axial direction extending roughly parallel to an axial direction of the squeegee, the pressurizing member being arranged to form between the pressurizing member and the printing mask a first gap through which the solder paste can pass in a direction opposite to the printing direction of the squeegee during a solder paste printing operation, the pressurizing member also being

arranged to form between the pressurizing member and the squeegee a second gap through which the solder paste can pass from the first gap toward the squeegee side of the pressurizing member.

wherein the pressurizing member is provided in a vicinity of an edge of the squeegee so that a pressure toward the printing mask is applied to the solder paste by the pressurizing member when the solder paste passes through the first gap located between the pressurizing member and the printing mask during the solder paste printing operation;

a pressure sensor that is provided within a range of printing on the back surface of the printing mask, which is a range in which the squeegee moves and detects a pressure of the solder paste applied via a pressure detection opening formed on the printing mask; and

a control means for controlling driving conditions of the squeegee in correspondence with a detection result of the pressure sensor.

17. (Previously Presented) A solder paste printing apparatus as claimed in claim 16, wherein the control means executes control on a basis of a pressure waveform that represents a change with a lapse of time of the pressure of the solder paste detected by the pressure sensor.

18. (Previously Presented) A solder paste printing apparatus as claimed in claim 16, wherein the control means is provided with a database in which a pressure waveform of the solder paste is registered and controls the driving conditions of the squeegee by comparing the pressure waveform detected by the pressure sensor with the solder paste pressure waveform that is registered in the database and becomes a criterion of decision.

19. (Previously Presented) A solder paste printing apparatus as claimed in claim 16, wherein a squeegee up-and-down drive device for changing a relative position in the vertical direction of the squeegee with respect to the printing mask is provided, and the relative position is adjusted by driving the squeegee up-and-down drive device by the control means.

20. (Previously Presented) A solder paste printing apparatus as claimed in claim 16, wherein a printing drive device for moving the squeegee in the printing direction is provided, and a travel speed in the printing direction of the squeegee is adjusted by driving the printing drive device by the control means.

21. (Previously Presented) A solder paste printing apparatus as claimed in claim 16, wherein a pressurizing member horizontal movement mechanism for changing a relative position of the pressurizing member with respect to the squeegee is provided, and the relative position of the pressurizing member is adjusted by driving the pressurizing member horizontal movement mechanism by the control means.

22. (Previously Presented) A solder paste printing apparatus as claimed in claim 16, wherein a pressurizing member vertical movement mechanism for changing a relative position of the pressurizing member with respect to the printing mask is provided, and the relative position of the pressurizing member is adjusted by driving the pressurizing member vertical movement mechanism by the control means.

23. (Original) A solder paste printing apparatus as claimed in claim 16, wherein the pressure sensor is provided short of a printing start end of the circuit-forming body, and the pressure detection of the solder paste is performed before starting the printing of the circuit-forming body.

24. (Currently Amended) A solder paste printing method ~~as claimed in claim 11~~, for printing a solder paste located on a surface of a printing mask having at least one opening,
the printing method comprising:

moving a squeegee on the surface of the printing mask in a printing direction
so as to print on a circuit-forming body placed on a back surface of the printing mask via
the opening;

applying a pressure toward the printing mask from an elongated pressurizing
member to the solder paste by making the solder paste pass in a direction opposite to the
printing direction of the squeegee through a first gap formed between the printing mask
and the pressurizing member during solder paste printing in a state in which the
pressurizing member provided in a vicinity of an edge of the squeegee is positioned in a
pressurizing position where a pressure is applied to the solder paste from a retreated
position where no pressure is applied thereto; and

making the solder paste pass again through the first gap located between the
pressurizing member and the printing mask after the solder paste that is passing from the
first gap toward the squeegee side of the pressurizing member passes through a second
gap located between the squeegee and the pressurizing member.

wherein the pressure of the solder paste flowing between the pressurizing member and the printing mask is increased by the pressurizing member provided in a vicinity of the edge portion of the squeegee, and the driving conditions of the squeegee

are controlled by detecting the increased pressure of the solder paste and comparing the detected pressure with a specified pressure preparatorily registered.

25. (Original) A solder paste printing method as claimed in claim 24, wherein the pressure of the solder paste is measured before starting pattern printing of the circuit-forming body, and the control of the driving conditions of the squeegee is completed before starting the pattern printing.

Claims 26-48 (**Cancelled**)